REMARKS

Claims 8-24 are pending in this application. By this Preliminary Amendment, Applicant AMENDS the specification and the abstract of the disclosure, CANCEL claims 1-7 and ADD new claims 8-24.

Applicant has attached hereto a Substitute Specification in order to make corrections of minor informalities contained in the originally filed specification. Applicant's undersigned representative hereby declares and states that the Substitute Specification filed concurrently herewith does not add any new matter whatsoever to the above-identified patent application. Accordingly, entry and consideration of the Substitute Specification are respectfully requested.

The changes to the specification have been made to correct minor informalities to facilitate examination of the present application.

Applicant respectfully submits that this application is in condition for allowance. Favorable consideration and prompt allowance are respectfully solicited.

Respectfully submitted,

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FOOTWEAR

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to footwear that absorbs impacts~~ean absorb an impact~~ on a foot during walking.

2. Description of the Related Art

An exemplary conventional shoe includes a ~~an upper~~ leather upper portion 501 and a shoe sole 502 that is separate from the ~~upper~~ leather upper portion 501. In the shoe sole 502, a shock absorber 503 such as a sponge is provided, as shown in Fig. 6, (see Japanese Patent Laid-Open Publication No. 2002-85108, and Japanese Utility-Model Laid-Open Publications Nos. Hei 6-7506 and Hei 6-77506). In this structure, the shock absorber 503 within the shoe sole absorbs an impact on a foot when the foot comes into contact with the ground during walking, thereby reducing fatigue of~~a burden on~~ the foot.

However, because the shoe includes~~is formed by~~ two parts, i.e., the shoe sole 502 including~~formed by~~ an outer sole, a midsole, and the like, and the ~~upper~~ leather upper portion 501 bonded to the shoe sole 502 to enclose the instep of the foot, the shoe sole 502 cannot easily conform to~~follow~~ the movement of the foot during walking. Therefore, it is difficult~~hard~~ for

the aforementioned structure to efficiently absorb an impact on the foot.

More specifically, during walking, the shoe changes ~~its~~ shape because of the movement of the foot. Thus, the shoe sole 502 cannot easily conform to~~follow~~ the movement of the foot while fitting the sole of the foot. Therefore, the shock absorber 503 provided within the shoe sole 502 cannot sufficiently absorb an impact on the foot.

Especially, in shoes with heels, such as a pair of pumps, the center of gravity moves toward a toe. Thus, it is likely that the toe receives a greater~~larger~~ impact. Moreover, since the movement of the toe is greater~~relatively larger~~ than that of the other portion, the fit~~a sense of fitting (sense of unity)~~ is insufficient on the toe and an impact on the toe is not sufficiently absorbed.

SUMMARY OF THE INVENTION

To overcome the problems described above, preferred embodiments ~~The present invention was made in view of the aforementioned problems. It is an object~~ of the present invention ~~to~~ provide footwear that ~~can~~ easily conforms to ~~follow~~ movement of a toe during walking and that~~can~~ sufficiently absorbs an impact on the toe.

~~(1)~~ Footwear according to a preferred embodiment~~first aspect~~ of the present invention includes an insole ~~comprises:~~

~~a pan member~~ provided in a front portion~~part~~ of a surface of an outer sole of the footwear, the surface being ~~to be~~ in contact with a sole of a foot. The insole~~, wherein the pan member~~ is provided with a shock absorber that is in~~comes into~~ contact with a front portion~~part~~ of the sole of the foot to absorb an impact.

According to the ~~above~~ structure described above, the shock absorber is~~can be~~ stably located at a toe because the shock absorber is provided in the insole.~~pan member.~~

Footwear according to another preferred embodiment~~a second aspect~~ of the present invention includes ~~comprises:~~

~~an~~ an upper leather member and a shoe sole bonded at its upper portion to the upper leather member, the upper leather member being configured to enclose~~formed in a shape enclosing~~ an instep of the foot and having a bottom opening rim closely resembling an outer shape of the sole of the foot, an insole ~~wherein a pan member is~~ bonded to a front portion~~part~~ of the bottom opening rim of the upper leather member so that a front portion~~part~~ of the upper leather member is configured~~formed~~ in the shape of a bag to enclose a toe, and the insole~~pan member~~ is provided with a shock absorber.

According to this structure, the insole~~pan member~~ is bonded to the front portion~~part~~ of the bottom opening rim of the upper leather such~~so~~ that the front portion~~part~~ of the

upper leather member is configured~~formed~~ in a shape of a bag to enclose the toe. Therefore, the ~~it is possible to improve following~~ ability of the footwear to conform to the movement of the toe during walking is improved.~~.~~ Moreover, the shock absorber is~~can be~~ stably located at the toe because the shock absorber is provided insole.~~in the pan member.~~

In the footwear ~~(2) Footwear~~ according to the preferred embodiments~~a third aspect~~ of the present invention, ~~is the aforementioned footwear (the first or second aspect) in which~~ the shock absorber preferably includes~~comprises~~ a gel.

By making~~forming~~ the shock absorber ~~with use~~ of a gel, deterioration~~exhaustion~~ of the shock absorber in which the shock absorber cannot recover from a compressed state because of long-term compression is ~~can be~~ greatly reduced, unlike a shock absorber made of ~~constituted by~~ a sponge. Thus, deterioration~~exhaustion~~ of the insole caused by deterioration~~pan member caused by exhaustion~~ of the shock absorber because of long-term use is~~can be~~ prevented, such ~~so~~ that a large change of the width of the footwear cannot occur. In addition, a gel does not suffer hydrolysis caused by absorbed moisture, such as sweat, unlike a sponge, and therefore degradation of a shock-absorbing property caused by hydrolysis is prevented.~~does not occur much.~~

In the footwear ~~(3) Footwear~~ according to ~~a fourth aspect of the present invention is~~ the preferred embodiments

of the present invention, ~~aforementioned footwear (any one of the first to third aspects) in which~~ the shock absorber preferably has an Asker F hardness in the range of about 30 to about ~~or more and~~ 90. This ensures a good fit ~~or less. This makes it possible to keep a sense of fitting~~ between the toe and the footwear and sufficient absorption of an impact ~~good and also possible to sufficiently absorb an impact~~ on the toe. When the Asker F hardness is less that about 30 ~~smaller than the above range~~, the shock absorber is too soft and cannot maintain the shape ~~degrades a shape keeping property~~ of the insole. ~~pan member.~~ This permits excessive ~~may allow easy~~ movement of the toe in the footwear, and degrades the fit ~~may lose the sense~~ of the footwear. ~~fitting.~~ On the other hand, when the Asker F hardness is greater than about 90 ~~exceeds the above range~~, the shock absorber is too hard and prevents ~~may prevent~~ sufficient shock absorption by the insole. ~~pan member.~~

In the footwear ~~(4) Footwear~~ according to the preferred embodiments ~~a fourth aspect~~ of the present invention, ~~is the aforementioned footwear (any one of the first to fourth aspects) in which~~ the shock absorber preferably has an Asker F hardness in the range of about 30 to about ~~or more and~~ 90 ~~or less~~ and an Asker C hardness in the range of about 10 to about ~~or more and~~ 25 ~~or less~~.

In this case, the shock absorber feels relatively ~~is felt~~

~~to be~~ hard ~~to a certain extent~~ when being compressed overpressed by an area approximately the same size as a palm. HoweverAlso, the shock absorber feels relativelyis felt to be soft when being compressed overpressed by an area approximately the size ofsame as a finger. Therefore, the shock absorber ~~can~~ firmly supports the entire toe, and ~~can~~ softly supports ~~support~~ protruding portions of the toe, ~~such as fingers,~~ by changing its shape in accordance with the shapes of the protruding portions. Thus, it is possible to provide an improved fit~~keep the sense of fitting better~~ and ~~it is also possible~~ to sufficiently absorb an impact, especially on the protruding portions of the toe.~~, such as fingers.~~

In other words, when the Asker F hardness is in the range of about 30 to about 90, the fit~~falls within the above range, the sense of fitting~~ between the toe and the footwear is outstanding~~can be kept good~~, and the shock absorber ~~can~~ sufficiently absorbs an impact on the toe like.~~ those in accordance with the fourth aspect.~~

When the Asker C hardness is ~~falls with~~in the ~~above~~ range of about 10 to about 25, the shock absorber ~~can~~ appropriately changes ~~change~~ its shape in accordance with the protruding portions of the toe.~~, such as fingers.~~ Therefore, the fit~~sense of fitting~~ and the shock absorbing property is~~can be~~ further improved. When the Asker C hardness is less ~~smaller~~ than about 10~~the above range~~, the shock absorber is too soft and

permits~~allows~~ the protruding portions of the wearer's~~wearer's~~ toe to compress the shock absorber~~go down~~ too much.~~deeply.~~ This degrades~~may lose~~ the fit~~sense~~ of the footwear.~~fitting.~~ On the other hand, when the Asker C hardness is greater than about 25~~exceeds the above range~~, the change of the shape of the shock absorber in accordance with the protruding portions of the wearer's~~wearer's~~ toe is not sufficient, although sufficient shock absorption is~~can be~~ achieved.~~ Thus, further improvement of the sense of fitting is difficult.~~

In the footwear ~~(5) Footwear~~ according to the preferred embodiments~~sixth and seventh aspects~~ of the present invention,~~ is the aforementioned footwear in which~~ each of the insole~~pan member~~ and the shock absorber is preferably configured~~formed~~ to have a ~~size with the~~ length and a width corresponding to those of a region of the sole of the foot from the~~a~~ tip of the toe to a front end of an arch.

This makes it possible to absorb an impact on the entire front portion~~part~~ of the sole of the foot.~~ more surely.~~

According to the preferred embodiments~~first and second aspects~~ of the present invention, the shock absorber is~~can be~~ stably located at the toe during walking. Thus, it is possible to ~~surely~~ absorb a large impact on the toe and greatly reduce fatigue, pains, and other stresses~~the like~~ of the foot.

With the shock absorber being made of a gel, ~~According to the third aspect of the invention, in addition to~~ the

fitaforementioned effects, the sense of fitting (sense of unity) when a wearer wearswore the footwear for the first time iscan be permanently maintainedkept, and it is possible to absorb an impact on the toe permanently.

With the shock absorber having an Asker F hardness in the range of about 30 to about 90, the fitAccording to the fourth aspect of the invention, in addition to the aforementioned effects, the sense of fitting between the toe and the footwear is outstandingcan be kept good, and an impact on the toe iscan be sufficiently absorbed.

With According to the shock absorber having an Asker F hardness in fifth aspect of the range of about 30 to about 90 and an Asker C hardness in invention, in addition to the range of about 10 to about 25aforementioned effects, it is possible to firmly support the entire toe. Moreover, it is possible to softly support the protruding portions of the toe, such as fingers, by changing the shape of the shock absorber in accordance with the protruding portions of the toe. Therefore, the fit is further improvedsense of fitting can be kept better and an impact on the protruding portions of the toe is, such as fingers, can be sufficiently absorbed.

With each of the insoleAccording to the sixth and seventh aspects of the invention, the shock absorber being configured to have a length and a width corresponding to those of a region of the sole of the foot from the tip of the toe to a

front end of an arch, the shock absorber is~~can be~~ more stably located at the toe during walking. Therefore, it is possible to ~~surely~~ absorb an impact on the front portion~~part~~ of the sole of the foot and greatly reduce fatigue, pains, or the stresses~~like~~ of the foot.

Other features, elements, steps, characteristics and advantages of the present invention will become more apparent from the following detailed description of preferred embodiments with reference to the attached drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a cross-sectional view of a shoe according to a preferred ~~an~~ embodiment of the present invention;

Fig. 2 is an exploded perspective view of the shoe according to a preferred ~~the~~ embodiment of the present invention;

Fig. 3 is a plan view showing a state in which an insole ~~a pan member~~ is stitched to a lining portion of the front portion~~part~~ of an upper leather member by French seam;

Fig. 4 is a perspective view showing an exemplary structure of the insole;~~pan member;~~

Fig. 5 is a perspective view of another exemplary structure of the insole~~pan member~~; and

Fig. 6 is a cross-sectional view of a conventional shoe having a shock-absorbing property.

~~Description of Reference Numerals~~

~~1 Upper leather~~

~~2 Shoe sole~~

~~3 Pan member~~

~~11 Upper opening rim~~

~~12 Bottom opening rim~~

~~13 Outer material portion~~

~~14 Lining portion~~

~~21 Outer sole~~

~~22 Heel~~

~~23 Half midsole~~

~~30 Shock absorber~~

~~31 Gel~~

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

Preferred embodiments~~An embodiment~~ of the present invention are ~~is~~ now described with reference to the drawings.

As shown in Figs. 1 and 2, a shoe according to ~~the embodiment of the present invention includes an upper leather 1 shaped in~~ a preferred embodiment of the present invention includes an upper leather member 1 shaped to enclose~~shape enclosing~~ the instep of a foot and a shoe sole 2 bonded at an~~its~~ upper portion thereof to the upper leather member 1.

The shoe sole 2 includes~~:~~ a plate-like outer sole 21

having an outer shape that closely resembles the outer shape of the sole of the foot, ~~;~~ a heel 22 in the form of a block provided at the heel portion of the rear portion ~~back face~~ of the outer sole 21, ~~;~~ and a half midsole 23 in the form of a sheet bonded to the rear portion ~~part~~ of the upper surface of the outer sole 21. The heel 22 is provided ~~formed~~ separately from the outer sole 21 and is bonded to the outer sole 21 with glue, nails, and other suitable bonding material. ~~the like.~~ However, the heel 22 may be ~~formed~~ integrally ~~formed~~ with the outer sole 21. The outer sole 21 and the heel 22 are preferably made ~~formed~~ of a synthetic resin, wood, or other suitable material. ~~the like.~~ The half midsole 23 extends ~~has a size~~ from the heel of the foot to the front end of the arch, and is bonded to the upper surface of the outer sole 21 by adhesion or sewing with a bottom opening rim 12 of the upper leather member 1 disposed ~~caught~~ between the half midsole 23 and the upper surface of the outer sole 21. The half midsole 23 is preferably made ~~formed~~ of cloth, leather, or other suitable material. ~~the like.~~

The upper leather member 1 is ~~a member~~ formed by shaping natural leather or synthetic leather to conform to ~~along~~ the shape of the instep of a foot. The upper leather member 1 includes an upper opening rim 11 to permit ~~for allowing~~ a foot to be inserted into ~~putting in~~ the shoe in its upper portion ~~part~~ and a bottom opening rim 12 that closely resembles the

outer shape of the sole of the foot in its lower portion~~part~~ (see Fig. 2). In the front portion~~part~~ of the bottom opening rim 12 of the upper leather member 1, an insole ~~a pan member~~ 3 in the form of a sheet is stitched by French seam. The front portion~~part~~ of the upper leather member 1 is configured~~formed~~ in the ~~a~~ shape of a bag so as to enclose a toe. More specifically, as shown in Fig. 3, the upper leather member 1 includes ~~is formed by~~ an outer material portion 13 and a lining portion 14. The insole ~~aforementioned pan member~~ 3 is stitched at its outer peripheral edge to the outer peripheral edge of the lining portion 14. Thus, the insole ~~pan member~~ 3 is in ~~comes into~~ contact with a region of the sole of the foot from the toe to the front end of the arch.

As a shoemaking method in which the front portion~~part~~ of the upper leather member 1 is stitched by French seam, a Bolognese method is known, for example.

The upper leather member 1 ~~having the above structure~~ is bonded to the upper portion of the outer sole 21 with the bottom opening rim 12 folded inward.~~pulled in.~~ More specifically, the rear portion~~part~~ of the bottom opening rim 12 of the upper leather member 1 is glued or sewed to the outer sole 21 with an inwardly folded~~bent~~ bonding margin being sandwiched between the outer peripheral edge of the outer sole 21 and the outer peripheral edge of the half midsole 23. The front portion~~part~~ of the upper leather member 1 is glued or

sewed to the outer sole 21 via ~~at its~~ bonding margin ~~that has been~~ formed by folding the~~bending~~ front portion inwardly~~leather inward~~, together with the lower surface of the insole ~~pan member~~ 3. Thus, the insole ~~pan member~~ is provided on the front portion~~part~~ of the surface of the outer sole of the footwear, the surface being in contact with the sole of the foot.

As shown in Fig. 4, the insole ~~pan member~~ 3 stitched to the front portion~~part~~ of the upper leather member 1 by French seam is formed by~~:~~ sandwiching a gel 31 between two fabric members 32 and 33 made~~formed~~ of a non-woven fabric or other suitable material,~~the like;~~ applying adhesive or other bonding material~~the like~~ to the peripheral portions of the two fabric members 32 and 33,~~;~~ and bonding them to each other. The two fabric members 32 and 33 have a ~~size with the~~ length and width corresponding to at least those of the region of the sole of the foot from the tip of the toe to the front end of the arch. The gel 31 also has a ~~the size with the~~ length and a width corresponding to at least those of the region of the sole of the foot from the tip of the toe to the front end of the arch. In other words, the two non--woven fabric members 32 and 33 and the gel 31 have similar shapes, and the two non-woven fabric members 32 and 33 are larger than the gel 31 to provide an~~by a size that ensures~~ adhesion margin or sewing margin in order to sandwich the gel 31 therebetween. The insole ~~pan~~

~~member~~ 3 is provided with a shock absorber 30 defined~~achieved~~ by the gel 31 and has ~~is formed to have~~ a thickness of approximately 5 mm, for example.~~.~~ Examples of the gel 31 include a member formed by a gel material sandwiched between two films (for example, one known as ~~"~~"U-NBC-45"~~"~~ manufactured by IIDA Industry Co., Ltd.).

A non-woven fabric used for the fabric members 32 and 33 is fabricated by a spunbond method, a needle punch method, a melt-blow method, and other suitable method.~~the like.~~ From a viewpoint of the strength of the fabric, it is preferable to use a non-woven fabric fabricated by the melt-blow method.

Moreover, it is preferable that the non-woven fabric member 32 be formed from a fabric that does not weaken the effect of the gel 31 and maintains contact with the ~~can keep a touch on the~~ sole of the foot. ~~provided by that effect.~~

As the shock absorber 30 in the insole ~~pan member~~ 3, various materials having shock-absorbing properties, other than the gel 31, such as a sponge and an elastomer can be used.~~, other than the gel 31.~~

In addition, as shown in Fig. 5, it is preferable that the insole ~~pan member~~ 3 includes stretchable films 34 that sandwich~~for sandwiching~~ the gel 31 therebetween. The film 34 has ~~is fabricated in~~ a planar shape and a~~having the~~ size that is approximately the same as that of the gel 31. The film 34 ~~can~~ preferably maintains contact with~~keep a touch on~~ the sole

of the foot provided by the effect of the gel 31, and for example, is made~~formed~~ of polyester urethane.

On the other hand, as a result of repeated compression caused by application of the weight equal to or greater~~heavier~~ than the wearer's~~wearer's~~ weight during walking, the shock absorber 30 may be deteriorated~~exhausted~~ and may not recover from a compressed state. In this case, the insole ~~pan member~~ 3 is similarly deteriorated.~~exhausted.~~ As a result, the width of the toe (width of the footwear) increases.~~becomes larger.~~ Moreover, deterioration of the insole ~~exhaustion of the pan member~~ 3 substantially~~largely~~ degrades its shock-absorbing properties.~~property.~~ Therefore, once the insole ~~pan member~~ 3 is deteriorated, the fit on the toe is deteriorated, and~~exhausted, a sense of fitting on the toe (sense of unity) is lost,~~ thus, the shock-absorbing properties are ~~property is~~ dramatically degraded. From this perspective, ~~such a viewpoint, as~~ the shock absorber 30 made of~~,~~ the gel 31 is~~is more~~ preferable to~~than~~ a sponge or ~~,~~ an elastomer.~~, and the like.~~

That is, by the gel 31 for~~forming~~ the shock absorber 30, deterioration~~ with use of the gel 31, exhaustion~~ in which the shock absorber 30 cannot recover from a compressed state because of long-term compression is greatly~~largely~~ reduced, unlike a shock absorber defined~~constituted~~ by a sponge. Therefore, the gel 31 is superior to ~~more advantageous than~~ a sponge in terms of recoverability (restoration property)

against compression. Thus, the use of the gel 31 prevents deterioration of the insole~~can prevent exhaustion of the pan member~~ 3 caused by deterioration~~exhaustion~~ of the shock absorber 30 due to ~~because of~~ long-term use. Also, the width of the footwear does not substantially change over time.~~cannot be changed largely.~~ Moreover, unlike a sponge, the gel 31 is preferable because ~~advantageous in that~~ it does~~dose~~ not suffer hydrolysis caused by absorbed moisture such as sweat, ~~unlike a sponge~~ and therefore, degradation of the shock-absorbing properties~~property~~ caused by hydrolysis of the gel 31 does not occur. ~~much.~~ As a result, the fit~~a sense of fitting~~ on the toe when the wearer wears the~~that~~ shoe for the first time is~~can be kept~~ permanently maintained, and the shock-absorbing properties are ensured.~~property can be sufficiently shown.~~

The gel 31 defining the~~constituting the above~~ shock absorber 30 ~~may~~ preferably has~~have~~ an Asker F hardness (hardness measured when being pressed by an area approximately the same as a palm) in the range of about 30 to about ~~or more and~~ 90 ~~or less~~, and an Asker C hardness in the range of about 10 to ~~or more and~~ 25. ~~or less is preferably used.~~ The Asker F hardness is a hardness measured when an object is compressed over~~to be measured is pressed by~~ a wide area approximately the same size as a palm. The Asker C hardness is a hardness measured when the object is compressed over~~pressed by~~ a narrow area approximately the same size as a finger. Both of the

Asker F hardness and the Asker C harness are used as~~for~~ a standard of hardness for a rubber elastic material and other similar materials.~~the like.~~

Thus, the gel 31 feels relatively~~is felt to be~~ hard ~~to a certain extent~~ when being compressed over~~pressed by~~ an area approximately the size ~~same~~ as a palm. On the other hand, the gel 31 feels relatively~~is felt to be~~ soft when being compressed over~~pressed by~~ a small area approximately the size ~~same~~ as a finger. Therefore, the gel 31 ~~can~~ firmly supports the entire toe, and ~~can~~ softly supports protruding portions of the toe ~~such as fingers~~ by changing its shape in accordance with the shapes of those protruding portions. Thus, the gel 31 maintains an outstanding fit and sufficiently provides~~can keep a sense of fitting better and can sufficiently show its~~ shock absorbing properties,~~property~~ especially for the projecting portions of the toe.~~ such as fingers.~~

When the Asker F hardness is~~falls~~ within the aforementioned range, an outstanding fit~~a sense of fitting~~ between the toe and the shoe maintained~~can be kept good~~ and an impact on the toe is ~~can be~~ sufficiently absorbed. In other words, when the Asker F hardness is less~~smaller~~ than the aforementioned~~above~~ range, the shock absorber 30 is too soft and degrades the shape-maintaining~~keeping~~ property of the insole~~pan member~~ 3. This allows~~may allow~~ easy movement of the toe in the shoe and degrades the fit.~~lose the sense of fitting.~~

On the other hand, when the Asker F hardness is greater than the aforementioned~~exceeds the above~~ range, the shock absorber 30 is hard and prevents~~may prevent~~ sufficient shock absorption by the insole~~pan member~~ 3.

Moreover, when the Asker C hardness is~~falls~~ within the aforementioned~~above~~ range, the shock absorber 30 changes ~~can change~~ its shape appropriately in accordance with the protruding portions of the toe. ~~such as fingers.~~ Therefore, the fit~~sense of fitting~~ and the shock-absorbing property are~~can be~~ further improved. When the Asker C hardness is less~~smaller~~ than the aforementioned~~above~~ range, the shock absorber 30 is too soft and may cause the protruding portions to excessively compress the insole.~~go down too deeply.~~ This may lead to a deteriorated fit.~~losing of the sense of fitting.~~ On the other hand, when the Asker C hardness is greater than the aforementioned~~exceeds the above~~ range, while an impact is~~can be~~ sufficiently absorbed, the change of the shape of the gel 31 in accordance with the protruding portions of the toe is not sufficient. This prevents further improvements in the fit~~improvement of the sense of fitting~~.

Examples of the material for the gel 31 include silicon resins, polyurethane resins, acrylamide gels, thermoplastic elastomers (such as styrene block copolymer; SBS, styrene-isoprene-styrene block copolymer; SIS), epoxy resins (containing plasticizer), starch-based gels (copolymer of

acrylonitrile and acrylic acid). Considering abrasion resistance, tear strength, elongation, balance between viscosity and elasticity, and cost, polyurethane resins are preferable.

A polyurethane resin is formed from polyol, isocyanate, and other suitable resin~~the like~~.

Examples of the polyol include polyether-type polyols (polyoxypropylene glycol; PPG, polyethylene glycol; PEG, and polytetramethylene ether glycol; PTMEG), polyester-type polyols (adipate-type polyols, polycaprolactone, aromatic-type polyols, and polycarbonate-type polyols), polyolefin-type polyols, acryl-type polyols. Considering the cost and water resistance, polyether-type polyols are preferable.

Examples of the isocyanate include TDI (tolylene diisocyanate), MDI (diphenylmethane diisocyanate), HDI (hexamethylene diisocyanate), NDI (naphthalene diisocyanate), IPDI (isophorone diisocyanate), and denatured isocyanate of those materials. Considering the cost, ease~~easiness~~ of handling, and reaction stability, the use of tolylene diisocyanate is preferable.

A ratio of the polyol and the isocyanate determines the Asker F hardness. For example, in the case where polyoxypropylene glycol (PPG) having molecular weights of 2000 and 10000 is used as the polyol and tolylene diisocyanate based denatured isocyanate is used as the isocyanate, the

following blending amounts are used.

According to a preferred embodiment of the present invention, the polyol contains polyoxypropylene glycol (PPG) having a ~~of~~ molecular weight of 2000 and PPG having a ~~of~~ molecular weight of 10000 that are blended at a weight ratio of 1:~~:~~1. Thus, the amount of each of PPG having a ~~of~~ molecular weight of 2000 and PPG having a ~~of~~ molecular weight of 10000 is about 10 to about 20 parts by weight, and more preferably in the range of about 12.5 parts by weight to about ~~or more and~~ 15 parts by weight. ~~or less.~~ When the polyol contains PPG having a ~~of~~ molecular weight of 1000 in an amount of about 20 parts by weight or less, the Asker F hardness exceeds about 90 and sufficient shock absorption cannot be achieved. When the polyol contains that PPG in an amount of about 40 parts by weight or more, the Asker F hardness is less than about 30. Thus, the shock absorber is too soft and the shape-maintaining~~keeping~~ property of the insole~~pan member~~ is degraded.

When tolylene diisocyanate based denatured isocyanate (NCO% = 3%)is used as isocyanate, the blending ratio thereof is in a range of about 35 to about 50 parts by weight, and more preferably, in the range of about 40 parts by weight to about ~~or more and~~ 45 parts by weight. ~~or less.~~

When the blending ratio of the isocyanate is about 50 parts by weight or more, the Asker F hardness exceeds about 90

and ~~the~~ sufficient shock absorption cannot be achieved. When the blending ratio is about 35 parts by weight or less, the Asker F hardness is less than about 30. Thus, the shock absorber is too soft and the shape-keeping property of the insole~~pan member~~ is degraded.

Polyurethane can be obtained by reacting polyol with isocyanate in the presence of a catalyst. Examples of the catalyst include amine type compounds and metal (nickel, tin, zinc, cadmium, magnesium, and mercury) compounds. Considering flexibility and control of the reaction, the use of metal compounds (e.g., a tin compound) is preferable.

It is preferable that the amount of the catalyst used be about 0.1 to about 1 parts by weight, provided that the amount of polyurethane (polyol + isocyanate) is 100. This provides a~~can provide~~ hardening ability and durability within appropriate ranges.

The polyurethane resin may contain a plasticizer. Examples of the plasticizer include aliphatic compounds, alicyclic compounds, and aromatic compounds (dibutyl phthalate, diheptyl phthalate, dioctyl phthalate, diisodecyl phthalate, ditridecyl phthalate, butylbenzyl phthalate, and butylphthalyl butylglycolate). Considering compatibility, the use of aromatic compounds is preferable. Particularly, the use of dibutyl phthalate is more preferable.

However, a ~~the~~ polyurethane resin containing no

plasticizer is the most preferable.~~best.~~ This is because the plasticizer migrates to the non-woven fabric members 32 and 33 of the insole ~~pan member~~ 3 and degrades the function of the insole ~~pan member~~ 3. When ~~In the case of~~ using a plasticizer, the insole ~~pan member~~ 3 is covered with a stretchable film that prevents ~~can prevent~~ permeation of the plasticizer.

The used amount of the plasticizer is preferably about 0 to about 50 parts by weight, with respect to the amount of polyurethane (polyol + isocyanate) as 100. This makes it possible to set the Asker hardness within an appropriate range.

Polyurethane resin may contain colorants, age resistors (antioxidants, ultraviolet absorber, light stabilizer, hydrolysis inhibitor), antifoamers, flame retardants, and other suitable additives.~~the like.~~

The shoe having the aforementioned structure can be fabricated in a similar manner to the conventional shoemaking method, and therefore, only a brief description is made. First, the upper leather member 1 is fabricated as follows. Leather as the material for the upper leather member 1 is cut out in accordance with a predetermined pattern paper. The cut leather is shaped to fit on ~~to~~ a wooden pattern having a shape of a foot. Then, the insole ~~pan member~~ 3 provided with a shock absorber 30, which has been prepared in advance, is stitched to the lining portion 14 in the front portion~~part~~ of the bottom opening rim 12 by French seam in such a manner that the

front portion~~part~~ of the bottom opening rim 12 forms a bag. Thus, fabrication of the upper leather member 1 is finished. Next, a bonding margin is formed by folding~~bending~~ the bottom opening rim 12 of the upper leather member 1 inward. Then, the upper leather member 1 is placed on the upper portion of the outer sole 21 including~~with~~ the heel 22, which has been fabricated in advance by molding. The rear portion~~part~~ of the upper leather member 1 is glued, sewed, or otherwise connected~~the like,~~ to the outer sole 21 with the bonding margin interposed between the outer peripheral edge of the outer sole 21 and the outer peripheral edge of the half midsole 23. The front portion~~part~~ of the upper leather member 1 is glued or sewed to the outer sole 21 at its bonding margin formed by folding~~bending~~ the outer material portion 13 of the upper leather member 1, together with the lower surface of the insole ~~pan member~~ 3. In this manner, the aforementioned shoe is completed.

As described above, in the shoe according to the preferred~~shoe of the above~~ embodiment described above, the insole ~~pan member~~ 3 is bonded to the front portion~~part~~ of the bottom opening rim 12 of the upper leather member 1, and the front portion~~part~~ of the upper leather member 1 is configured~~formed~~ in the ~~a~~ shape of a bag so as to enclose a toe. Thus, the~~following~~ ability of the shoe to conform to the movement of the toe during walking is greatly~~can be~~ improved.

Moreover, the shock absorber 30 having a ~~the~~ length and width corresponding to those of the region of the sole of the foot from the tip of the toe to the front end of the arch is provided in the insole ~~pan member~~ 3. Thus, the shock absorber 30 is~~can be~~ stably located with respect to the toe, for example, the region from the tip of the toe of the sole of the wearer's~~wearer's~~ foot to the front end of the arch. Therefore, it is possible to ~~surely~~ absorb a large impact on the toe and greatly reduce fatigue or pains of the foot.

Moreover, by forming the shock absorber 30 using~~with use of~~ the gel 31, deterioration~~exhaustion~~ of the shock absorber 30, in which the shock absorber 30 cannot recover from a compressed state because of long-term compression, does not occur~~much~~, unlike a shock absorber defined~~constituted~~ by a sponge. Thus, deterioration of the insole ~~exhaustion of the pan member~~ 3 caused by the deterioration~~exhaustion~~ of the shock absorber 30 due to ~~because of~~ long-term use is~~can be~~ prevented, such that the width ~~so that a large size change~~ of the footwear is not substantially changed.~~width does not occur much.~~ In addition, unlike a sponge, the gel 31 does not suffer hydrolysis caused by absorbed moisture such as sweat, ~~unlike a sponge~~ and therefore, degradation of a shock-absorbing property caused by hydrolysis does not occur.~~much.~~ Therefore, the fit~~a sense of fitting~~ when a wearer wears the shoes for the first time is maintained~~can be kept~~ permanently, and an

impact on the wearer's toe iswearer's toe can be absorbed permanently.

In addition, by using the fabric member 32 madeformed of a non-woven fabric or other suitable materialthe like, the gel 31 does not come into direct contact directly with a sole of a foot. Moreover, by sandwiching a film 34 between the gel 31 and the non-woven fabric member 32, permeation of the gel 31 through the fabric member 32 iscan be prevented. Thus, in the case where the gel 31 iswas permeated, it is possible to prevent a wearer from feeling discomfort, for example, feeling that the sole of the foot is sticky because of the gel 31.

Furthermore, by selecting the material for the gel 31 as the shock absorber 30 so as to achieve the Asker F hardness in the rage of about 30 to about or more and 90 or less and the Asker C hardness in the range of about 10 to about or more and 25 or less, the gel 31 can firmly supports the entire toe, and can softly support the protruding portions of the toe, such as fingers, by changing its shape in accordance with those protruding portions. Thus, the fit is improvedsense of fitting can be kept better, and shock absorption iscan be sufficiently providedperformed, especially for the protruding portions of the toe, such as fingers.

Next, a compression and recovery test was performed for a gel and a sponge. The test is generally described below.

<ExamplesSamples>

(1) Gel (having~~formed to have~~ a thickness of 12 mm by stacking 3-mm-thick sheets of "U-NBC-45" manufactured by IIDA Industry Co., Ltd.)

(2) Sponge (having~~formed to have~~ a thickness of 12 mm by stacking 2-mm-thick sheets of "H-32" manufactured by Rogers Inoac Corporation)

<Test method>

For each sample, compression (about 5 hours) and release (about 1 hour) were repeated eight times. Then, after each sample was left as it was for 30 minutes, 24 hours, and 36 hours, a ratio of thickness distortion ~~of thickness~~ (compression set (%)) was measured (see Table 1). The compression was performed to reduce the thickness of the sample to $\frac{1}{4}$~~1/4~~ (25%) of the original thickness.

【Table 1】

Time(h) / Compression set (%)	0.5(h)	24(h)	36(h)
Gel	8.0(%)	4.3(%)	2.7(%)
Sponge	30.0(%)	21.0(%)	11.5(%)

<Evaluation>

As is apparent from the above results, for both the gel and the sponge, compression set becomes smaller with the time. However, it was found that compression set of the gel was

smaller than that of the sponge from the beginning of the release and therefore deterioration~~exhaustion~~ of the gel was less than that of the sponge.

Values of hardness of the gel ("~~(~~"U-NBC-45"~~"~~ manufactured by IIDA Industry) and the sponge ("~~(~~"H-32"~~"~~ manufactured by Rogers Inoac Corporation) that have a thickness of 20 mm and were used in the above samples are as follows (see Table 2). The values of hardness in Table 2 were measured by ~~means of~~ an Asker F hardness tester and an Asker C hardness tester.

【Table 2】

	Asker F hardness	Asker C hardness
Gel	85	17
Sponge	78	40

The above gel and the above sponge satisfy the condition in which the Asker F hardness is in a range of about~~from~~ 30 to about 90. Therefore, both the above gel and the above sponge maintain the fit~~can keep a sense of fitting~~ between a wearer's~~wearer's~~ toe and a shoe ~~good~~ and ~~can~~ sufficiently absorb an impact on the toe.

On the other hand, the above gel also satisfies the condition in which the Asker C hardness is in a range of about~~from~~ 10 to about 25. Therefore, the gel ~~can~~ firmly supports the entire toe, and ~~can~~ softly supports protruding

portions of the toe, ~~such as fingers,~~ by changing its shape in accordance with the protruding portions. Thus, the gel ~~can keep the sense of fitting~~ better maintains the fit and ~~can~~ sufficiently absorbs an impact especially on the protruding portions of the toe.~~, such as fingers.~~

In the above-described preferred embodiment, a pair of pumps provided with heels is described as an example. However, the present invention may be applied to a pair of boots or shoes with no heels. Moreover, the present invention may be applied to any ladies' shoe ~~of ladies' shoes~~ and any men's shoe.~~men's shoes.~~ In addition, the present invention may be applied not only to formal shoes but also to various sports shoes, such as jogging shoes. Furthermore, the present invention may be applied to footwear such as sandals or slippers. The materials for the upper leather member 1 and the outer sole 2 are not limited to the materials described above. Various materials can be used.

While the present invention has been described with respect to preferred embodiments, it will be apparent to those skilled in the art that the disclosed invention may be modified in numerous ways and may assume many embodiments other than those specifically set out and described above. Accordingly, it is intended by the appended claims to cover all modifications of the invention which fall within the true spirit and scope of the invention.